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HEWLETT PACKARD COMPANY  
P O BOX 272400, 3404 E. HARMONY ROAD  
INTELLECTUAL PROPERTY ADMINISTRATION  
FORT COLLINS, CO 80527-2400

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1 UNITED STATES PATENT AND TRADEMARK OFFICE

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3  
4 BEFORE THE BOARD OF PATENT APPEALS  
5 AND INTERFERENCES  
6

7  
8 *Ex parte* JEFFREY CLIFFORD MOGUL, KEITH ISTVAN FARKAS,  
9 PARTHASARATHY RANGANATHAN, AND EDUARDO S. PINHEIRO

10  
11  
12 Appeal 2007-1654  
13 Application 10/033,404<sup>1</sup>  
14 Technology Center 2100  
15

16  
17 Decided: February 5, 2008  
18  
19

20  
21 Before ALLEN R. MACDONALD, MARC S. HOFF, and  
22 CAROLYN D. THOMAS, *Administrative Patent Judges*.

23  
24 THOMAS, C., *Administrative Patent Judge*.

25  
26 DECISION ON APPEAL

27  
28 I. STATEMENT OF THE CASE

29 Appellants appeal under 35 U.S.C. § 134 from a final rejection  
30 of claims 1-39 entered February 26, 2006. We have jurisdiction under  
31 35 U.S.C. § 6(b).

\_\_\_\_\_  
1<sup>1</sup> Application filed December 27, 2001. The real party in interest is Hewlett-  
2 Packard Development Company, L.P.

1 We reverse the rejections under 35 U.S.C. § 103, and enter a new  
2ground of rejection as to claims 1-10 and 37 under 35 U.S.C. § 101.

3

4 A. INVENTION

5 Appellants invented a system, method, and computer program product  
6for providing energy-efficient prefetching of files in a network environment.  
7The system uses a prefetch prediction model having energy usage  
8parameters to predict the impact of prefetching specified files on the  
9system's energy usage. (Spec., Abstract).

10

11 B. ILLUSTRATIVE CLAIM(S)

12 The appeal contains claims 1-39. Claims 1, 11, 21, 32, and 37-39 are  
13independent claims. As best representative of the disclosed and claimed  
14invention, claims 1, 32, and 37 are reproduced below:

15 1. A computer program product for use in conjunction with a  
16client computer system having at least one application having instructions  
17for specifying files to be fetched from a server, the computer program  
18product comprising a computer readable storage medium and a computer  
19program mechanism embedded therein, the computer program mechanism  
20comprising:

21

22 a prefetch prediction model including energy usage parameters  
23for predicting an impact on energy usage by the client computer system that  
24would result from prefetching specified files;

25

26 a prefetch prediction engine coupled to the prefetch prediction  
27model for evaluating the specified files with respect to prefetch criteria,  
28including energy efficiency prefetch criteria, and generating a prefetch  
29decision with respect to each file of the specified files;

30

9

1 instructions for storing in a queue entries identifying each  
2specified file for which the prefetch prediction engine generates an  
3affirmative prefetch decision; and

4

5 instructions for fetching files identified by entries in the queue.

6

7

8 32. A computer system comprising:

9

10 at least one processing unit for executing procedures containing  
11executable instructions;

12

13 a server module, executable by the at least one processing unit,  
14for responding to a request from a client computer for a specified file and for  
15generating a reply to the request, the reply including a content portion  
16comprising the specified file; and

17

18 a prefetch predictor, executable by the at least one processing  
19unit, for identifying additional files for possible prefetching by the client  
20computer;

21

22 the server module including instructions for including in a  
23supplemental portion of the reply to the request from the client computer  
24prefetch hint information identifying at least one of the additional files,  
25wherein the supplemental portion is distinct from the content portion of the  
26reply.

27

28

29 37. A computer program product for use in conjunction with a  
30client computer system having at least one application having instructions  
31for specifying files to be fetched from a server, the computer program  
32product comprising a computer readable storage medium and a computer  
33program mechanism embedded therein, the computer program mechanism  
34comprising:

35

36 a prefetch prediction model including cost parameters for  
37predicting an impact on monetary charges incurred by the client computer  
38system that would result from prefetching specified files;

39

1 a prefetch prediction engine coupled to the prefetch prediction  
2model for evaluating the specified files with respect to prefetch criteria,  
3including cost efficiency prefetch criteria, and generating a prefetch decision  
4with respect to each file of the specified files;

5  
6 instructions for storing in a queue entries identifying each  
7specified file for which the prefetch prediction engine generates an  
8affirmative prefetch decision; and

9  
10 instructions for fetching files identified by entries in the queue.

11

12 C. REFERENCES

13 The references relied upon by the Examiner in rejecting the claims on  
14appeal are as follows:

|    |           |                    |                       |
|----|-----------|--------------------|-----------------------|
| 15 | Malkin    | US 6,085,193       | Jul. 4, 2000          |
| 16 | Shinozaki | US 6,173,392 B1    | Jan. 9, 2001          |
| 17 | Saxena    | US 2002/0103778 A1 | Aug. 1, 2002          |
| 18 |           |                    | (Filed Dec. 6, 2000)  |
| 19 | Shatil    | US 6,728,840 B1    | Apr. 27, 2004         |
| 20 |           |                    | (Filed Oct. 20, 2000) |
| 21 |           |                    |                       |

22 D. REJECTION(S)

23 The Examiner entered a Final Rejection with the following rejections  
24which are before us for review:

25 Claims 1-31, and 37-39 are rejected under 35 U.S.C. § 103(a) as being  
26unpatentable over Shatil in view of Saxena;

27 Claims 32-34 are rejected under 35 U.S.C. § 103(a) as being  
28unpatentable over Malkin in view of Shatil; and

1 Claims 35 and 36 are rejected under 35 U.S.C. § 103(a) as being  
2unpatentable over Malkin in view of Shatil and further in view of  
3Shinozaki.<sup>2</sup>

4

5

## II. PROSECUTION HISTORY

6 Appellants appealed from the Final Rejection and filed an Appeal  
7Brief (Br.) on August 28, 2006. The Examiner mailed an Examiner's  
8Answer (Answer) on November 1, 2006. Appellants filed a Reply Brief  
9(Reply Br.) on January 3, 2007.

10

11

12

## III. ISSUE(S)

13 Whether Appellants have shown that the Examiner erred in rejecting  
14claims 1-39 as being obvious over the combination of cited references.

15

16

## IV. FINDINGS OF FACT

17 The following findings of fact (FF) are supported by a preponderance  
18of the evidence.

19

### *Invention*

20 1. The Specification discloses that "the prefetch prediction model 118  
21preferably includes two or more of the following types of parameters: CPU  
22energy usage parameters 160, for instance indicating CPU energy usage per  
23prefetch . . . Network interface energy usage parameters 162, for instance  
24network interface fixed energy required to send a packet . . . Memory access

18<sup>2</sup> On page 16 of the Examiner's Answer, the Examiner noted that the Final  
19Action mailed [February] 26, 2006 contained a typographical error. Claims  
2035 and 36 are rejected over Malkin in view of Shatil and further in view of  
21Shinozaki.

1energy usage parameters 163, for instance memory read/write energy costs  
2per byte or word . . . Energy supply parameters 164, for instance total energy  
3availability . . .” (Spec., 6-7).

4

5 *Shatil*

6 2. Shatil discloses that the system “create rule-like prefetch criteria  
7entries . . . to govern caching operations.” (Col. 12, ll. 27-30.)

8 3. Shatil discloses that “[t]he example prefetch database 220 includes  
9columns of prefetch criteria including ‘requester criteria’ 401, ‘data access  
10technique criteria’ 402, ‘data criteria’ 403 and optionally, one or more  
11columns of ‘other criteria’ 404.” (Col. 16, ll. 56-61: Fig. 5.)

12

13 *Saxena*

14 4. Saxena discloses that a “transaction weight represents the  
15importance of the link and associated web page to the origin server and may  
16be used to control the prefetching of web pages by the cache server.”  
17(Abstract.)

18

19 V. PRINCIPLES OF LAW

20 The scope of patentable subject matter under section 101 is broad, but  
21not infinitely broad. “Congress included in patentable subject matter *only*  
22those things that qualify as ‘any ... process, machine, manufacture, or  
23composition of matter, or any ... improvement thereof....’” *In re*  
24*Warmerdam*, 33 F.3d 1354, 1358 (Fed. Cir. 1994) (quoting 35 U.S.C.  
25§ 101) (emphasis added). Thus, “[d]espite the oft-quoted statement in the  
26legislative history of the 1952 Patent Act that Congress intended that

1statutory subject matter ‘include anything under the sun that is made by  
2man,’[citation omitted], Congress did not so mandate.” *Id.*

3 Appellants have the burden on appeal to the Board to demonstrate  
4error in the Examiner’s position. See *In re Kahn*, 441 F.3d 977, 985-86  
5(Fed. Cir. 2006) (“On appeal to the Board, an applicant can overcome a  
6rejection [under § 103] by showing insufficient evidence of prima facie  
7obviousness or by rebutting the prima facie case with evidence of secondary  
8indicia of nonobviousness.”) (quoting *In re Rouffet*, 149 F.3d 1350, 1355  
9(Fed. Cir. 1998)).

10 “Section 103 forbids issuance of a patent when ‘the differences  
11between the subject matter sought to be patented and the prior art are such  
12that the subject matter as a whole would have been obvious at the time the  
13invention was made to a person having ordinary skill in the art to which said  
14subject matter pertains.’” *KSR Int’l Co. v. Teleflex Inc.*, 127 S. Ct. 1727,  
151734 (2007). The question of obviousness is resolved on the basis of  
16underlying factual determinations including (1) the scope and content of the  
17prior art, (2) any differences between the claimed subject matter and the  
18prior art, (3) the level of skill in the art, and (4) where in evidence, so-called  
19secondary considerations. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18  
20(1966). See also *KSR*, 127 S. Ct. at 1734 (“While the sequence of these  
21questions might be reordered in any particular case, the [*Graham*] factors  
22continue to define the inquiry that controls.”)

23

24

25

## VI. ANALYSIS

26

### *Grouping of Claims*



1 In the Brief, Appellants argue claims 1-31 as a group. In other words,  
2for claims 2-31, Appellants merely repeat the same argument made for claim  
31. Thus, the Board selects representative claim 1 to decide the appeal for  
4this group. 37 C.F.R. § 41.37(c)(1)(vii)(2006). Accordingly, the remaining  
5claims in this group stand or fall with claim 1.

6 Appellants argue claims 37-39 as a group. For claims 38 and 39,  
7Appellants repeat the same argument made for claim 37. We will, therefore,  
8treat claims 38 and 39 as standing or falling with claim 37.

9 Appellants argue claims 32-36 as a group. For claims 33-36,  
10Appellants repeat the same argument made for claim 32. We will, therefore,  
11treat claims 33-36 as standing or falling with claim 32. *See* 37 C.F.R.  
12§ 41.37(c)(1)(vii). *See also In re Young*, 927 F.2d 588, 590 (Fed. Cir. 1991).

13

#### 14*The Board's Claim Construction*

15 "Our analysis begins with construing the claim limitations at issue."  
16*Ex Parte Filatov*, No. 2006-1160, 2007 WL 1317144, at \*2 (BPAI 2007).

17 Claims are given their broadest reasonable construction "in light of  
18the specification as it would be interpreted by one of ordinary skill in the  
19art." *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir.  
202004).

21 We note that Appellants have identified several "energy usage  
22parameters" in the Specification, all of which appear to look at the "energy  
23required" and/or "energy cost" for performing a particular act (FF 1).  
24Therefore, we find that Appellants have defined the claimed term "energy  
25usage parameters" broadly to include any power requirements and/or costs  
26required to performed specific tasks.

1

2

*The Obviousness Rejection*

*3Regarding Claim 1*

4 We now consider the Examiner's rejection of claims 1-31 under  
535 U.S.C. § 103(a) as being obvious over the combination of Shatil and  
6Saxena.

7 "Having determined what subject matter is being claimed, the next  
8inquiry is whether the subject matter would have been obvious." *Ex Parte*  
9*Massingill*, No. 2003-0506, 2004 WL 1646421, at \*3 (B.P.A.I 2004). The  
10question of obviousness is "based on underlying factual determinations  
11including . . . what th[e] prior art teaches explicitly and inherently . . . ." *In*  
12*re Zurko*, 258 F.3d 1379, 1383 (Fed. Cir. 2001) (citing *Graham v. John*  
13*Deere Co.*, 383 U.S. 1, 17-18 (1966); *In re Dembiczak*, 175 F.3d 994, 998  
14(Fed. Cir. 1999); *In re Napier*, 55 F.3d 610, 613 (Fed. Cir. 1995)). "In  
15rejecting claims under 35 U.S.C. § 103, the examiner bears the initial burden  
16of presenting a *prima facie* case of obviousness." *In re Rijckaert*, 9 F.3d  
171531, 1532 (Fed. Cir. 1993) (citing *In re Oetiker*, 977 F.2d 1443, 1445 (Fed.  
18Cir. 1992)). "A *prima facie* case of obviousness is established when the  
19teachings from the prior art itself would appear to have suggested the  
20claimed subject matter to a person of ordinary skill in the art." *In re Bell*,  
21991 F.2d 781, 783 (Fed. Cir. 1993) (quoting *In re Rinehart*, 531 F.2d 1048,  
221051 (CCPA 1976)).

23 Appellants contend that "[w]hile Shatil is drawn to a prefetch engine  
24using prefetch criteria, Shatil fails to teach or suggest energy usage  
25parameters." (Br. 8.) Appellants further contend that "Saxena, like the  
26remaining prior art of record, fails to cure the deficiencies of Shatil, because

1Saxena also fails to teach or suggest energy usage parameters. The  
2Applicants note that the Examiner has not attempted to allege that Saxena  
3teaches or suggests energy usage parameters.” (Br. 9.)

4 The Examiner responds that “Shatil et al teaches of comparing access  
5data against prefetch criteria, which can include various types of data  
6including energy efficiency data and is not limited and does not exclude any  
7type of possible criteria including energy usage parameters.” (Answer 14.)  
8We disagree.

9 We are in agreement with Appellants that Shatil fails to specifically  
10disclose energy usage parameters that represent power usage or costs  
11required to perform particular actions. Instead, Shatil merely discloses  
12criteria entries for requesters, data access techniques, data type, file sizes,  
13time requirements, and user designations (FF 2-3). The Examiner has failed  
14to specifically show that Shatil’s criteria make any reference to power  
15consumption or cost. The Examiner’s conclusionary statement that Shatil’s  
16prefetch criteria can include energy efficiency data can not be a substitute  
17for evidence in the record. Therefore, we reverse this rejection.

18

19*Regarding Claim 37*

20 Appellants contend that “cost is not a factor used in Saxena to make a  
21prefetch determination, but only the ‘importance of web pages,’ which is not  
22based on cost or monetary charges. In contrast, claims 37-39 recite the use  
23of ‘cost parameters for predicting an impact on monetary charges incurred  
24by the client computer system.’” (Br. 10.) Appellants further contend that  
25“Saxena fails to teach or suggest ‘predicting an impact on monetary charges  
26incurred by the client computer system,’ as recited in independent claims 37-

138. Saxena specifically discloses that the ‘origin server is paying for  
2caching services.’ Therefore, Saxena only discloses using importance as a  
3factor in relation to the origin server and not a client machine.” (Br. 11.)

4 The Examiner responds that “Saxena teaches . . . transaction weight  
5feature, which may comprise of a numeric or other indication of weight,  
6which is widely known to include various indicators including cost.”

7(Answer 15.) We disagree.

8 Again, we find that the Examiner’s conclusionary statement that the  
9numeric transaction weight feature is widely known to include cost can not  
10be a substitute for evidence in the record. Here, the Examiner has failed to  
11show any cost factors in Saxena. Saxena discloses a transaction weight that  
12merely represents the importance of the link (FF 4). We find that while  
13Saxena’s “importance factor” may be used to control prefetching, the  
14Examiner has failed to establish that such a factor is equivalent to “cost  
15parameters for predicting an impact on monetary charges.”

16 Therefore, we reverse this rejection.

17

18*Regarding Claim 32*

19 Appellants contend that “Malkin and Shinozaki . . . fail to teach or  
20suggest energy efficient criteria. The Examiner . . . does not even attempt to  
21allege that this feature is taught or suggested by Shinozaki.” (Br. 12.)

22Appellants further contend that “claim 36 recites ‘predicting an impact on  
23energy usage by the client computer.’ The Examiner . . . fails to address it.”  
24(Br. 12.)

1 The Examiner states that Malkin fails to teach of using an energy  
2efficiency criteria and instead notes that Shatil teaches using various types of  
3criteria to allow access to files. (Answer 12 and 15) We disagree.

4 Moreover, the Examiner applies the same reasoning as used in the  
5rejection of claim 1, as noted *supra*. Therefore, we reverse this rejection for  
6the same reasons as noted *supra* regarding claim 1.

7

## 8 VII. NEW GROUND OF REJECTION UNDER 35 U.S.C. § 101

9 In addition to reversing the Examiner's rejection of claim 1-39, this  
10decision, pursuant to our authority under 37 C.F.R. § 41.50(b), contains a  
11new ground of rejection.

12 On February 6, 2006, the Examiner rejected claims 1-10 and 37 under  
1335 U.S.C. § 101 because "[t]he specification refers to a computer program  
14product not tangibly embodied by the transmission of a computer data signal  
15on a carrier wave." (Final Office Action, 2.)

16 In response, Appellants argued at page 6 of the Brief that "the  
17Examiner failed to fully consider the language of independent claims 1 and  
1837, because claims 1 and 37 specifically recite that the computer program  
19product is embodied in a 'computer readable storage medium.'" Appellants  
20go on to argue on the same page that "[t]he only reference to a carrier wave  
21within the originally filed specification occurs with respect to the description  
22of software modules, which may also be included in the computer program  
23product. The specification states that software modules may be distributed  
24by computer data signals on a carrier wave." Appellants then conclude on  
25page 7 that "claims 1-10 and 37 comply with the provisions of 35 U.S.C.  
26§ 101 and the rejection must be withdrawn."

1 In turn, the Examiner concluded that the arguments overcame the  
2rejection under 35 U.S.C. § 101. The rejection was withdrawn at page 2 of  
3the Answer. We disagree with the Examiner’s conclusion for the reasons  
4discussed *infra*, and we apply the rejection of claims 1-10 and 37 anew.

5 Claims 1-10 and 37 are rejected under 35 U.S.C. § 101 because the  
6claimed invention is directed to non-statutory subject matter. Claims 1 and  
737 are reproduced *supra*, are representative.

8 Specifically, claims 1 and 37 are directed to “[a] computer program  
9product . . . comprising a computer readable storage medium...” and  
10Appellants explicitly states that the “. . . program modules may be stored on  
11a CD-ROM, magnetic disk storage product, or any other computer readable  
12data or program storage product. The software modules in the computer  
13program product may also be distributed electronically, via the Internet or  
14otherwise, by transmission of a computer data signal (in which the software  
15modules are embedded) on a carrier wave. (Spec., 13.)

16 We find that Appellants’ description of a ‘computer readable storage  
17medium’ expressly implicates carrier waves and signals.

18 That said, the issue, quite simply, is whether a claimed computer  
19readable storage medium that is broad enough to include transmission-type  
20media – a media that includes carrier waves and signals – is statutory subject  
21matter. We have argued that a carrier wave or signal is not statutory subject  
22matter because it does not fall within any of the four categories of statutory  
23subject matter. *See In re Petrus A.C.M. Nuijten*, --- F.3d ---, (2007 WL  
242728397) (Fed. Cir. Sept. 20, 2007). In this instance, claims 1 and 37  
25includes both statutory and non-statutory subject matter that, according to

1recent proposed USPTO interim guidelines, must be amended to recite  
2solely statutory subject matter.<sup>3</sup>

3 Even if as carrier wave or signal could be considered to be an article  
4of manufacture, however, we find that such a carrier wave or signal does not  
5operate as the claimed computer readable storage medium. Claims 1 and 37,  
6for example, recites a computer readable medium having instructions for  
7causing a client computer to execute a method. As a result, it is our view  
8that the computer cannot perform the claimed functions while the  
9instructions are embodied on a carrier wave or a signal. In other words, the  
10information, while on the carrier wave or signal, is unavailable to the  
11computer for performing the functions recited in the claims.

12 For the above reasons, we find that claims 1 and 37 recite non-  
13statutory subject matter. The “medium” of claims 2-10 shares the same  
14interpretations as discussed *supra* for “medium” in claim 1. For the reasons  
15*supra*, we conclude that claims 1-10 and 37 are also directed to non-statutory  
16subject matter.

17

18 *37 C.F.R. § 41.50(b)*

19 37 C.F.R. § 41.50(b) provides that, “[a] new ground of rejection  
20pursuant to this paragraph shall not be considered final for judicial review.”

21 37 C.F.R. § 41.50(b) also provides that the Appellants, *WITHIN TWO*  
22*MONTHS FROM THE DATE OF THE DECISION*, must exercise one of the

---

58<sup>3</sup> See also “Interim Guidelines for Examination of Patent Applications for  
59Patent Subject Matter Eligibility,” 1300 Off. Gaz. Pat. Office 142, Annex  
60IV(C)(2)(Nov. 22, 205) (“[A] claim that can be read so broadly as to include  
61statutory and nonstatutory subject matter must be amended to limit the claim  
62to a practical application.”).

63

1following two options with respect to the new grounds of rejection to avoid  
2termination of proceedings (37 C.F.R. § 1.197 (b) as to the rejected claims:

3 (1) Reopen prosecution. Submit an appropriate amendment of the  
4 claims so rejected or new evidence relating to the claims so rejected,  
5 or both, and have the matter reconsidered by the examiner, in which  
6 event the proceeding will be remanded to the examiner ...  
7

8 (2) Request rehearing. Request that the proceeding be reheard under  
9 37 C.F.R. § 41.52 by the Board upon the same record ...  
10

## 11 VIII. CONCLUSIONS

12 We conclude that Appellants have not shown that the Examiner erred  
13in rejecting claims 1-39 under 35 U.S.C. § 103.

14 We enter a new ground of rejection for claims 1-10 and 37 under  
1535 U.S.C. § 101.

16 Since we have entered a new ground of rejection against claims 1-10  
17and 37, our decision is not a final agency action.  
18

## 19 IX. DECISION

20 In view of the foregoing discussion, we reverse the Examiner's  
21rejection of claims 1-39 under 35 U.S.C. § 103.

22 Under 37 C.F.R. § 41.50 (b), we have entered a new ground of  
23rejection against claims 1-10 and 37 under 35 U.S.C. § 101.  
24

25 No time period for taking any subsequent action in connection with  
26this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R.  
27§ 1.136(a)(1)(iv) (2006).  
28



69Appeal 2007-1654  
70Application 10/033,404

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REVERSED

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37 C.F.R. § 41.50(b)

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